



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/784,757

02/23/2004

Xiangrong Cai

127-334

2210

34845 7590 08/31/2011  
Anderson Gorecki & Manaras LLP  
33 NAGOG PARK  
ACTON, MA 01720

EXAMINER

PHAN, TUANKHANH D

ART UNIT

PAPER NUMBER

2163

NOTIFICATION DATE

DELIVERY MODE

08/31/2011

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

handerson@smmalaw.com  
officeadmin@smmalaw.com  
cmorrisette@smmalaw.com

UNITED STATES PATENT AND TRADEMARK OFFICE

---

BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

---

*Ex parte* XIANGRONG CAI

---

Appeal 2009-010515  
Application 10/784,757  
Technology Center 2100

---

*Before* JOSEPH L. DIXON, HOWARD B. BLANKENSHIP, and  
JAY P. LUCAS, *Administrative Patent Judges*.

BLANKENSHIP, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

This is an appeal under 35 U.S.C. § 134(a) from the Examiner's final rejection of claims 1-16, which are all the claims in the application. We have jurisdiction under 35 U.S.C. § 6(b).

We reverse.

*Representative Claim*

1. A method of maintaining consistent group membership data at a Designated Router executing the Protocol Independent Multicast (PIM) protocol including the steps of:

receiving, at the Designated Router, an IGMP membership message from an IGMP host operating according to the Internet Group Multicast Protocol (IGMP) protocol;

translating the IGMP membership message into a PIM membership message; and

selectively forwarding the PIM membership message to a device upstream from the Designated Router, including delaying forwarding a PIM prune message in response to an IGMP Leave if the Designated Router is in the upstream path from the IGMP host.

*Examiner's Rejections*

Claim 10 stands rejected under 35 U.S.C. § 112, second paragraph, as being indefinite.

Claims 1-16 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Watkinson (US 7,233,987 B2) and Haggerty (US 6,331,983 B1).

ANALYSIS

*Section 112, Second Paragraph*

The legal standard for definiteness is whether a claim reasonably apprises those of skill in the art of its scope. *In re Warmerdam*, 33 F.3d 1354, 1361 (Fed. Cir. 1994). The inquiry is merely to determine whether the

claims do, in fact, set out and circumscribe a particular area with a reasonable degree of precision and particularity. *In re Moore*, 439 F.2d 1232, 1235 (CCPA 1971).

Claim 10 recites, *inter alia*, selectively processing the PIM membership message responsive to whether the entry is stored in the routing table, including “not processing” a PIM prune message if a local IGMP host exists. The Examiner contends that the negative limitation of “not processing” renders the claim indefinite. Final Rej. 2.

We do not sustain the § 112, second paragraph rejection of claim 10. We agree with Appellant (App. Br. 9-10) that a negative limitation in a claim does not necessarily render the claim indefinite. The rejection offers no reasoning in support of why the metes and bounds of “not processing” a message in accordance with claim 10 cannot reasonably be ascertained. The claim, on its face, merely appears to further limit the “selective” processing of the PIM membership message by specifying one way in which “selectively processing” the message can be effected.

*Section 103(a)*

The Examiner rejects claim 1 as being obvious over the combination of Watkinson and Haggerty. The Examiner finds that Watkinson teaches all the subject matter of claim 1, except for delaying forwarding of a PIM prune message in response to an IGMP Leave if the Designated Router is in the upstream path from the IGMP host. The Examiner turns to Haggerty for the teaching deemed to be missing from Watkinson, referring to Haggerty’s text at column 19, lines 34 through 42. Ans. 5.

Appellant contests the Examiner's finding with respect to Haggerty. Appellant contends that the cited portion of the reference teaches a timer that determines the time during which IGMP membership reports (in response to query) must be received, rather than delaying forwarding a PIM prune message as claimed. App. Br. 12.

The Examiner, in response, further relies on Haggerty's text at column 19, lines 40 through 65. Ans. 9-10. Appellant responds in turn that the rejection improperly mixes Haggerty's statement of a problem and two different solutions to the problem. Reply Br. 5-6.

Haggerty at column 19, line 33 through column 20, line 2 describes an IGMP "Active Senders Problem." A switch runs a separate IGMP state machine on each of its access ports. The state machine sends IGMP membership queries periodically out each port, and listens for IGMP membership reports ("joins") to maintain a database of local receivers per port. If a timer expires without any reports, the switch knows there are no receivers for that group and can stop forwarding multicast flows out that port. Haggerty col. 19, ll. 20-31.

Haggerty teaches that, in response to the query from the switch, if a given host reports and that host is also a sender to the group and the source of a connection to other receivers in the domain, the membership report is forwarded out all those receivers' ports. Hearing this report causes other hosts to reset their timers instead of responding to the local queries on their links. Haggerty col. 19, ll. 33-41. The "timers" of the hosts are distinct from the switch state machine timers, and apparently relate to avoiding traffic congestion from all member hosts responding simultaneously. *See* Haggerty col. 5, ll. 19-27.

In any event, Haggerty further teaches that the lack of response from other hosts may cause the problem of the switch not knowing if receivers were still there. Haggerty teaches that a non-satisfactory solution would be to delay queries on those access ports having active senders. Haggerty col. 19, ll. 42-47. Haggerty teaches two solutions to the problem: having the IP protocol field distinguish IGMP packets; and “sniffing” each access port for the duration of a “query interval” of about ten seconds. *Id.* at col. 19, l. 48 - col. 20, l. 2.

In view of the foregoing teachings of Haggerty, we agree with Appellant that the rejection has failed to establish that Haggerty teaches delaying forwarding a PIM prune message in response to an IGMP Leave if the Designated Router is in the upstream path from the IGMP host, as recited in claim 1. Because each of independent claims 6 and 16 recites the same limitation but is rejected on the same basis, we cannot sustain the rejection of these claims and their dependent claims.

Independent claim 10 recites selectively processing the PIM membership message responsive to whether the entry is stored in the routing table, “including not processing a PIM prune message if a local IGMP host exists.” The statement of the rejection does not appear to address the foregoing limitations, but in the responsive portion of the Answer the Examiner refers to Figure 7A of Haggerty. Ans. 10. However, we agree with Appellant (Reply Br. 8-9) that Haggerty’s description of Figure 7A in the text fails to relate to “not processing a PIM prune message if a local IGMP host exists.” We thus cannot sustain the § 103(a) rejection of claim 10, nor that of the claims that depend therefrom.

DECISION

The rejection of claim 10 under 35 U.S.C. § 112, second paragraph, as being indefinite is reversed.

The rejection of claims 1-16 under 35 U.S.C. § 103(a) as being unpatentable over Watkinson and Haggerty is reversed.

REVERSED

llw